



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/885,884	06/20/2001	Michael R. Thompson	PKR 2 0659 US	4522

7590 02/12/2004
FAY, SHARPE, FAGAN
MINNICH & McKEE, LLP
Seventh Floor
1100 Superior Avenue
Cleveland, OH 44114-2518

EXAMINER

SHAW, SHAWNA JEANNINE

ART UNIT	PAPER NUMBER
----------	--------------

3737

8

DATE MAILED: 02/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/885,884

Applicant(s)

THOMPSON ET AL.

Examiner

Shawna J. Shaw

Art Unit

3737

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11/17/03.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 and 15-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 and 15-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 October 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 7.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1, 2, 9-11, 13 and 15-19 have been considered but are moot in view of the new ground(s) of rejection.
2. The indicated allowability of claims 3-8, 12, 15, 16, 18 and 20-23 is withdrawn in view of the newly discovered reference(s) to Loncar et al. (6,075,362), Ericcson et al. (5,869,023) and Rocklage et al. (5,190,744). Rejections based on the newly cited reference(s) follow.

Claim Rejections - 35 USC § 103

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-7, 9-11, 13 and 15-21, are rejected under 35 U.S.C. 103(a) as being unpatentable over Loncar et al. of record in view of Rocklage et al. of record or Ericcson et al.

Regarding claims 1-7, 9-11, 13 and 15-21, Loncar et al. teaches a method and apparatus for dual contrast magnetic resonance imaging to obtain at least two differently weighted sets of image data including at least one of a T_2 or T_2^* image data (col. 1 lines 15-62), sorting and reconstructing the image data to generate first and second interleaved image representations (col. 1 line 66 – col. 2 line 18) and correcting/quantifying the image representations with respect to one another (by addition, subtraction, etc.) on a pixel by pixel basis (col. 5 lines 47-53) to create a third, combined, image. Moreover, Loncar et al. discloses wherein the imaging sequence may be any one of fast spin echo, echo planar imaging, etc. (col. 4 lines 19-23). See also figure 1. Loncar et al. differs from the claimed invention in that administration of a contrast agent is not explicitly addressed. Rocklage et al. teaches a dual-contrast method including administering (e.g., injecting) a paramagnetic contrast agent, such as a gadolinium chelate, (having T_1 , T_2 , and T_2^* altering capabilities) to more quickly pinpoint and quantify variations in the T_2 or T_2^* weighted images (col. 1 lines 34-54, col. 3 line 63 – col. 4 line 8, col. 6 lines 52-68, col. 7 lines 1-22). Ericcson et al. teaches dual-contrast echo planar imaging involving administration of both a positive and negative contrast agent (col. 5 lines 10-37 and 60-64). It would have therefore been obvious at the time the invention was made to a person of ordinary skill in the art to administer a contrast agent having dual contrast capabilities as taught by Rocklage et

al. or Ericcson et al. in the invention as taught by Loncar et al. to further enhance the image-ability of T_2 or T_2^* weighted image data and to more controllably quantify the differences in contrast.

4. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Loncar et al. of record in view of Rocklage et al. or Ericcson et al. of record and further in view of Foxall.

Regarding claim 8, Loncar et al. and Rocklage et al. differ from the claimed invention in that conjugate symmetry is not addressed explicitly. In the same field of endeavor, Foxall teaches it is well known to use conjugate symmetry to augment EPI data (col. 6 lines 42-59). It would have therefore been obvious at the time the invention was made to a person of ordinary skill in the art to employ conjugate symmetry to enable faster image acquisition.

5. Claims 12, 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Loncar et al. of record in view of Rocklage et al. of record or Ericcson et al. as applied to claims 1 and 19 above and further in view of Wang.

Regarding claims 12, 22 and 23, Loncar et al. and Rocklage et al. differ from the claimed invention in that partial parallel imaging is not explicitly addressed. Wang provides the general teaching of partial parallel acquisition using a plurality of coils (see figure 1) to improve image quality of echo planar images. See col. 1 lines 27-32 and col. 3 lines 51-67. It would have been obvious at the time the invention was made to a person of ordinary skill in the art to use a partial parallel acquisition technique employing a plurality of coils as taught by Wang in the invention as taught by Loncar et al. in view


of Rocklage or Ericcson et al. to improve image quality as well as to effectively track perfusion.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shawna J. Shaw whose telephone number is (703) 308-2985. The examiner can normally be reached on 8:00 a.m. - 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dennis Ruhl can be reached on (703) 308-2262. The fax phone number for the organization where this application or proceeding is assigned is (703) 305-3590.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0858.



Shawna J. Shaw
Primary Examiner
2/5/04